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NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

SPECIAL REPORT 3

DEFINITION OF METHOD OF

MEASUREMENT OF SUPPORTING AND CONTROL SURFACE AREAS

AS APPROVED BY COMMITTEE ON AERODYNAMICS  
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS

October 15, 1930  
And Amended February 14, 1931

Special Report 3

May, 1931

DEFINITIONS OF METHOD OF  
MEASUREMENT OF SUPPORTING AND CONTROL SURFACE AREAS  
AS APPROVED BY COMMITTEE ON AERODYNAMICS,  
NATIONAL ADVISORY COMMITTEE FOR AERONAUTICS,  
OCTOBER 15, 1930.  
AND AMENDED FEBRUARY 14, 1931.

AREA - MEASUREMENT OF SUPPORTING SURFACE

Wing Area shall be measured from the projection of the actual outline on the plane of the chords, without deduction for area blanketed by fuselage or nacelles. That part of the area, so determined, which lies within the fuselage or nacelles shall be bounded by two lateral lines that connect the intersections of the leading and trailing edges with the fuselage or nacelle, ignoring fairings and fillets. In other words, for the purpose of calculating area, a wing shall be considered to extend without interruption through fuselage and nacelles (figure 1).

Unless otherwise stated, Wing Area shall always refer to total area, including ailerons.

AREA - MEASUREMENT OF CONTROL SURFACE

Horizontal Tail Area shall be measured in the same manner as wing area, that is, with no deduction for the area blanketed by the fuselage, such blanketed area being bounded within the fuselage by lateral straight lines that connect the intersections of the leading and trailing edges of the stabilizer with the sides of the fuselage, ignoring fairings or fillets (figure 2).

Vertical Tail Area shall be the area of the actual outline of rudder and fin projected in the vertical plane, ignoring fairings and fillets (figure 3).

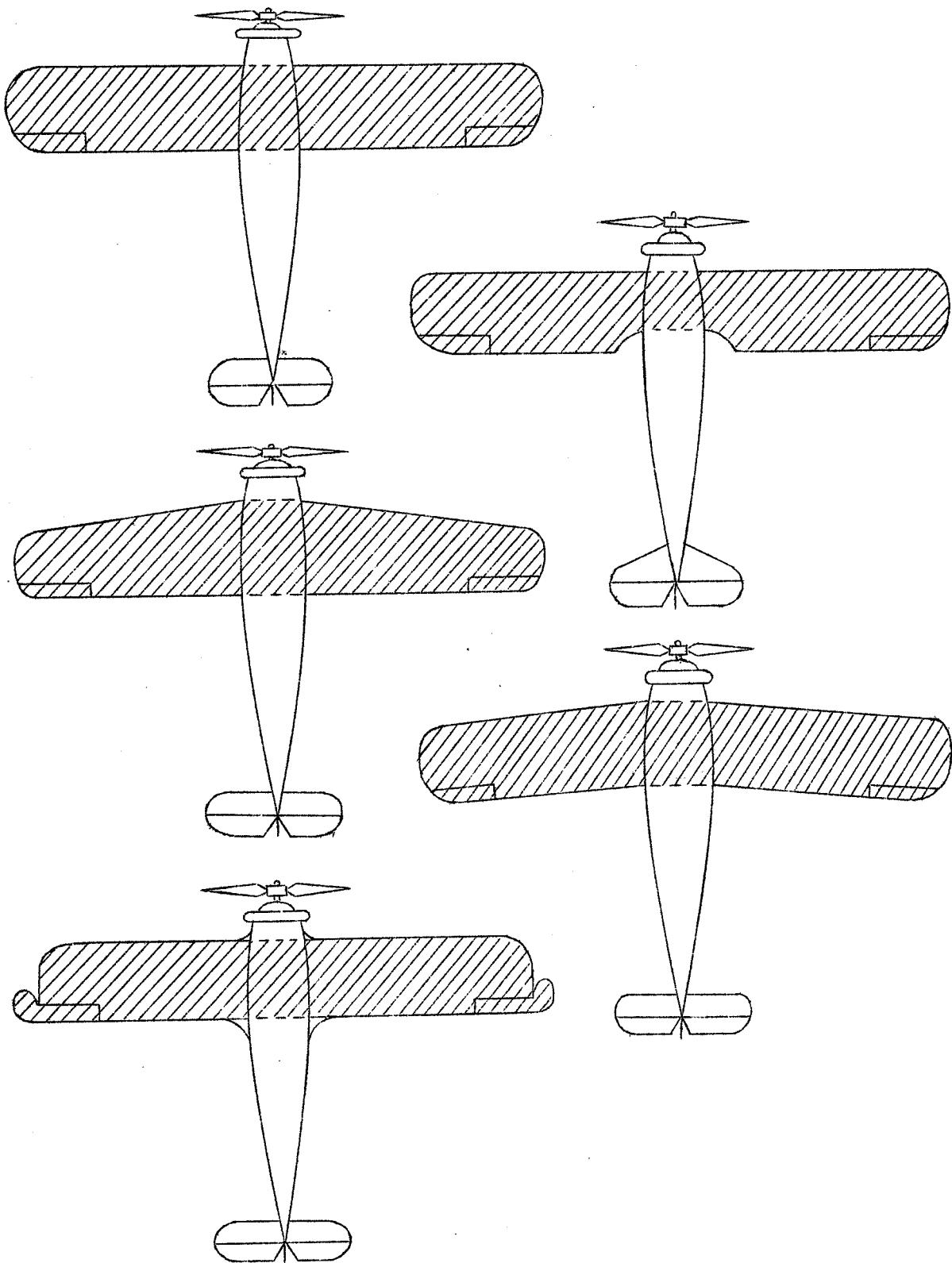
Trailing Control Surface Area. The area of a trailing control surface (aileron, rudder, or elevator) shall be the area of the actual outline projected on the plane of the surface except that any portion of the movable surface lying forward of the hinge axis and within the fixed surface shall be included in the fixed surface. Auxiliary or paddle-type balance surfaces shielded by and lying outside of the fixed surface shall not be included in the area of either fixed or movable surfaces (figure 4).

NOTE

The above definitions are for use only in obtaining performance data and tabulating airplane characteristics and not in connection with the making of stress analysis calculations.

STANDARD METHOD  
OF MEASURING WING AREA

Wing area is crosshatched

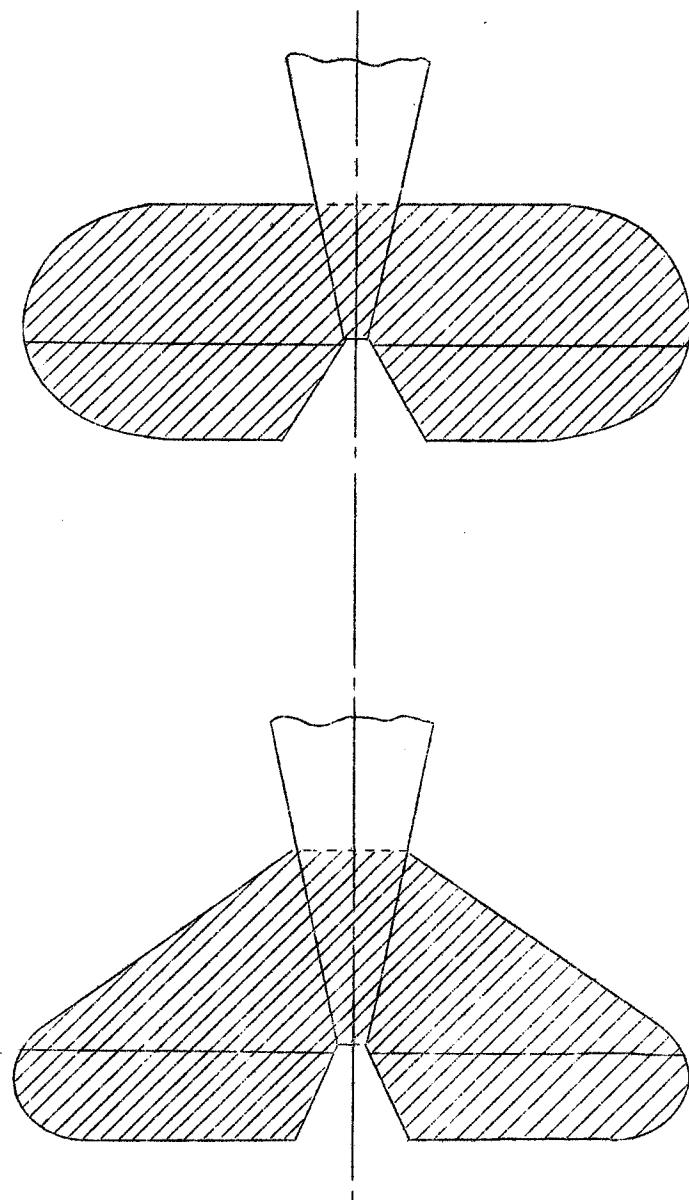


N.A.C.A.

Fig. 1

STANDARD METHOD  
OF MEASURING HORIZONTAL TAIL AREA

Horizontal tail area is crosshatched

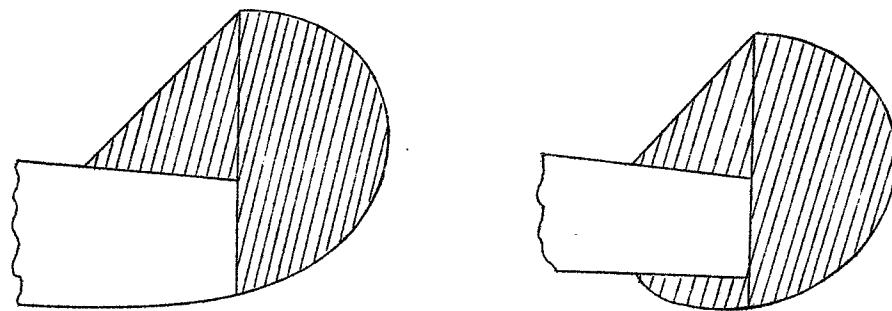


N.A.C.A.

Fig.2

STANDARD METHOD  
OF MEASURING  
VERTICAL TAIL AREA

Vertical tail area is crosshatched.

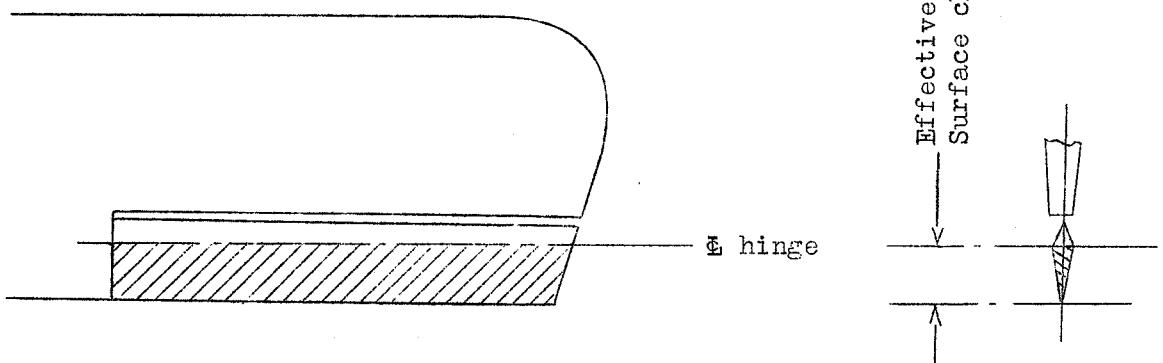
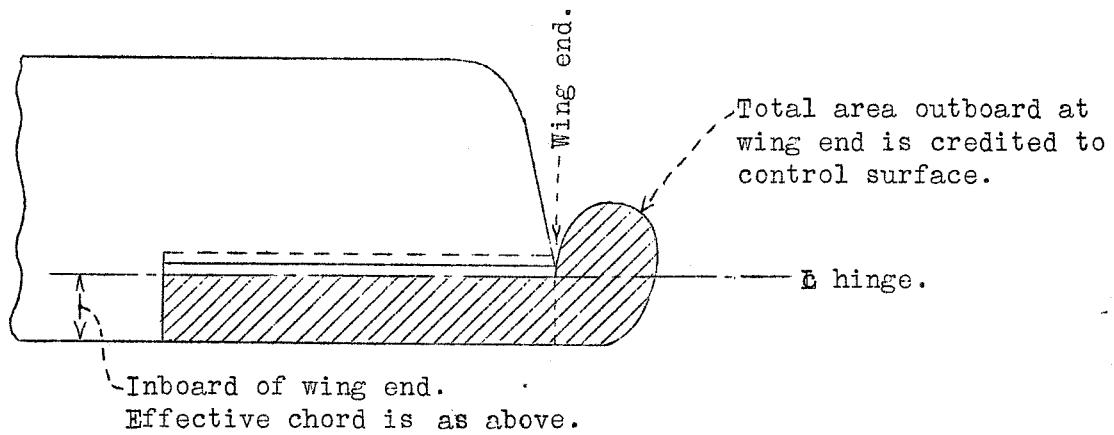
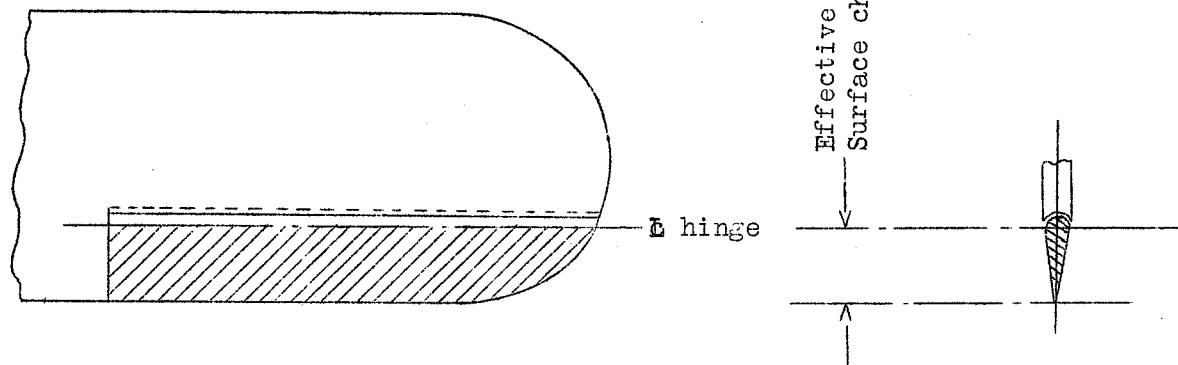


N.A.C.A.

Fig.3

STANDARD METHOD  
OF MEASURING CONTROL SURFACE AREA

Control surface area is crosshatched



N.A.C.A.

Fig. 4

